NOV 1921

THE JOURNAL OF PHILOSOPHY

GENERAL LIBRARY
NOV - 2 1921
UNIV. OF MICH.

VOL. XVIII. NO. 22: OCTOBER 27, 1921

CONTENTS

Is the Conservation of Energy Proved of the Human Body? WILMON H. SHELDON 589

Instinct and Capacity, II: Homo Domesticus: C. E. AYRES 600

The Group Spirit and the Fear of the Dead: JOSHUA C. GREGORY. 606

Reviews and Abstracts of Literature:

Edman's Human Traits: H. B. ALEXANDER..... 609

Journals and New Books 612

Notes and News 614

PUBLISHED FORTNIGHTLY

THE JOURNAL OF PHILOSOPHY

All communications to the Editors should be addressed to PROFESSOR FREDERICK J. E. WOODBRIDGE, or PROFESSOR WENDELL T. BUSH, Columbia University, New York City.

Subscriptions and advertisements should be sent to THE JOURNAL OF PHILOSOPHY, Sub-Station 84, New York City. The annual subscription price (twenty-six numbers) is $4.00 and the charge for single numbers is 20 cents. Advertising rates will be forwarded on application.

The Journal of Philosophy, is owned and published by Frederick J. E. Woodbridge and Wendell T. Bush, at Lancaster, Pa.

Entered as second class matter, March 18, 1921, at the Post Office at Lancaster, Pa. under Act of Congress of March 3, 1879.

Publishers: WILLIAMS & NORGATE - London; WILLIAMS & WILKINS CO. - Baltimore; FELIX ALCAN - Paris; NICOLA ZANICHELLI - Bologna; RUIZ HERMANOS - Madrid; THE MARUZEN COMPANY - Tokyo.

"SCIENTIA"

INTERNATIONAL REVIEW OF SCIENTIFIC SYNTHESIS
Issued Monthly (each number consisting of 100 to 120 pages).
Editor: EUGENIO RIGNANO.

IT IS THE ONLY REVIEW, which has a really international collaboration.

IT IS THE ONLY REVIEW, of absolutely world-wide circulation.

IT IS THE ONLY REVIEW, occupying itself with the synthesis and unification of knowledge, which deals with the fundamental questions of all the sciences: history of the sciences, mathematics, astronomy, geology, physics, chemistry, biology, psychology and sociology.

IT IS THE ONLY REVIEW, which, by means of an enquiry among the most eminent scientists and writers of Allied and neutral countries, studies all the most important questions — demographic, ethnographic, economic, financial, juridical, historical, political — raised by the world war.

It has published articles by Messrs.:

Abbot - Arrhenius - Ashley - Bayliss - Beichman - Benes - Bigourdan - Bohlin - Bohn - Bonnesen - Borel - Bottazzi - Bouty - Bragg - Brillouin - Bruni - Burdick - Carracido - Carver - Castelnuovo - Caullery - Chamberlin - Charlier - Ciamician - Claparède - Clark - Costantin - Crommelin - Crowter - Darwin - Delage - De Martonne - De Vries - Durkheim - Eddington - Edgeworth - Emery - Enriques - Fabry - Findlay - Fisher - Foà - Fowler - Fredericq - Galeotti - Golgi - Gregory - Guignebert - Harper - Hartog - Heiberg - Hinks - Hopkins - Ifigues - Innes - Janet - Jespersen - Kaptein - Karpinski - Kaye - Kidd - Knibbs - Langevin - Lebedew - Lloyd Morgan - Lodge - Loisy - Lorentz - Loria - Lowell - MacBride - Matruchot - Maunder - Meillet - Moret - Muir - Pareto - Peano - Pearl - Picard - Plana - Poincaré - Puiseux - Rabaud - Reuterskjöld - Rey Pastor - Righi - Rignano - Russell - Rutherford - Sagnac - Sarton - Sayce - Schiaparelli - Scott - See - Selignan - Shapley - Sherrington - Soddy - Starling - Stojanovich - Struycken - Svedberg - Tannery - Teixeira - Thalbitzer - Thomson - Thorndike - Turner - Vinogradoff - Volterra - Von Zeipel - Webb - Weiss - Westermarck - Wicksell - Willey - Zeeman - Zeuthen and more than a hundred others.

"Scientia" publishes its articles in the language of its authors, and joins to the principal text a supplement containing the French translations of all the articles that are not in French. (*Write for a Specimen Number to the General Secretary of "Scientia," Milan.*)

ANNUAL SUBSCRIPTION: 40 sh., or 10 dollars post free. OFFICE: 43, Foro Bonaparte, Milan (Italy). *General Secretary:* Doct. PAOLO BONETTI.

Vol. XVIII, No. 22. October 27, 1921

The Journal of Philosophy

IS THE CONSERVATION OF ENERGY PROVED OF THE HUMAN BODY?

THE philosopher, learning nature's laws at second hand from the scientist, labors under a disadvantage. He is accustomed to make sweeping statements; his discipline approves nothing short of universal judgments such as "consciousness is coordinated behavior" "all events are caused," *etc.* Accordingly when he finds, or thinks that he finds, in certain of the sciences some very widely attested law, or some all but universal habit of mind or of method, he leaps to an absolute principle and attributes to the law, the habit, or the method, an authority brooking no exceptions. He forgets that in the history of science results apparently final have been superseded. Chemical atoms have been analyzed; gravitation may become a residual electrical phenomenon; the ideal of mechanical explanation by impact and recoil, which received from the kinetic theory of gases an appearance of well-nigh universal truth and so long dominated the scientific imagination, now admits a rival if not a conqueror in the electrical theory of matter. We are no longer invited to view the world as a vast, intricate pattern of billiard-balls, but rather as a collection of charged corpuscles, streaming, oscillating, or grouped in systems. And the uniform time and space which Kant so confidently assumed may have to be given up, at the challenge of the doctrine of relativity. It is also well to remember that Darwin's theory of the origin of species has never met the demands of the palæontologists, who feel compelled to postulate an orthogenesis which the biologist has not been able to explain. In fact, the argument for the evolution of species, however strong it may be, proceeds by circumstantial evidence[1] and thereby lacks the demonstrative force of an experiment in physics, or a mathematical calculation. Yet these considerations have not prevented the pragmatist from building a philosophy upon the Darwinian scheme, or the mechanist from framing another upon the billiard-ball ideal, or either of them from assuming as a final truth that every event has a cause and that the physical energy of the universe remains constant. In particular, the latter assertion

[1] *Cf.* Morgan, *A Critique of the Theory of Evolution*, p. 9, p. 14 ff.

has been used by philosophers as a ground for denying the efficacy of mind, *viz.*, its initiation of change in the bodily processes of man. Some twenty years ago Münsterberg was wont to anathematize the interactionist as one who doubted that surest result of science, the conservation of energy. With an instant generalization from the sciences of the inorganic, and in the true Prussian spirit of system at any cost, he extended the application of this law to the whole visible universe, living and non-living alike. And the majority of philosophers and of psychologists—so far as the latter are willing to study the interesting problem of the relation between mind and body—have followed his example. Few are willing to lend an ear to the suggestions of animism or vitalism; few take the trouble to inquire how far the doctrine of conservation has been shown to hold of life or mind. Nor is the fault all on one side. If Münsterberg and the mechanists, imbued with fear of being considered unscientific, gave to a scientific law more than it ever claimed, a vitalist like M. Bergson roundly declares that that law has never been proved, and does *not* hold, of life and mind.[2] The French professor, whose statement was published in English in 1920, took no notice of careful experiments on the subject printed in 1903, which we shall presently consider and which seem to contradict his assertion. Even McDougall, who mentions[3] a brief report of these experiments without examination of their argument, summarily insists that the law can never be proved to hold of processes so delicate and complex as those of the nervous system: "The few experiments which go to show that the energy given out by an organism is equal in amount to the energy taken in, are far too few and too rough to rule out the possibility that psychical effort may involve increment of energy to the organism; for increments far too small to be detected might effect very important changes in the course of the organic processes."[4] The original record of the experiments in question Professor McDougall does not mention, and without analysis of them to see just what they do prove such general denials and affirmations are of little value.

The law of conservation of energy, so far as proved, is an empirical induction. In inorganic nature this indication seems to leave no room for reasonable doubt. The energy of closed systems of many sorts has been measured, with the utmost minuteness, at the beginning and end of some process and has been found constant within the limits of error in observation. It is no *a priori* matter; the measurements might have shown increase or diminu-

[2] *Mind-Energy*, pp. 43–45.
[3] *Body and Mind*, p. 93.
[4] *Op. cit.*, p. 220.

tion. Now life is *prima facie* different from the inorganic. It may not really be different in kind, but it looks so; and this renders the extension of the law problematic. However much a philosopher or biologist may attempt with the broom of the inorganic law to sweep the universe clean of mental energy and of other animistic "superstitions," the simple fact is that we do not know, without experiment, whether or not mind contributes energy to the organism. And it is of some interest to find out.

To be sure, there are systematists who believe the issue to have been exploded—pragmatists, idealists, behaviorists, *etc.* Differing on many points, they agree that the dualism of mind and body is an opposition of unreal abstractions, and therefore there is no question of the relation between them. It would be like asking whether the color of an orange affects its shape. Perhaps the illustration is an unhappy one, for just that can be asked and answered. It has been proved that light is a measurable energy. But it is easy to see that no such epistemological analysis of experience in general can settle problems of real interest; all that they do is to recast our phraseology. We are now to ask whether the law that holds of the abstractions called inorganic processes holds also of other abstractions called living processes, or between these two abstractions, *etc.* Again, the question might be stated thus: does the coordination of responses in living things have a measurable effect on the particular responses, and conversely? Or it might be put in quite materialistic fashion: does the energy taken into the living organism of man remain constant in amount during redistribution in the organism and return to the outer world?

Upon the question of fact we find a series of experiments of which most philosophers and even psychologists seem unaware. McDougall, as was said above, refers to these, but only to a very brief statement of their result in the Reports of the British Association for 1904. He has not given his readers an opportunity to estimate the validity of the arguments employed; and in virtue of the extraordinary care of the experiments and the crucial issue which they discuss, this is unfortunate. Accordingly it seems a plain duty to give some account of the investigation, in order that we may see just where the latest scientific evidence leaves us in the whole question. The experiments were performed by Drs. W. O. Atwater and F. G. Benedict and are recorded as Bulletin No. 136, U. S. Department of Agriculture, Office of Experiment Stations, under the title *Experiments on the Metabolism of Matter and Energy in the Human Body* (Washington, 1903). It may be that there are later experi-

ments; the author speaks of their desirability indeed; but I find no record of them in later Bulletins or elsewhere.

In an earlier research, conducted by Atwater and Rosa (same series, Bulletin 63, 1899, p. 11) the experimenters had said: "The views of specialists as to whether the law of the conservation of energy actually applies in the living organism are somewhat conflicting. So far as the writers can judge, the larger number of chemists, physicists, and physiologists who have at all carefully considered the subject assume that the law does obtain; basing that supposition on the *a priori* ground that there is every reason to believe that it must hold in the organic world, as it has already been demonstrated to hold in the inorganic world. Not a few regard the experiments already made, notably those of Rubner just referred to, as implying very strongly, even if they do not strictly demonstrate, the application of the law in the animal body. Others, however, question this demonstration, and there are some physiologists who, knowing from long experience the difficulties inherent in this kind of experimenting, the many sources of uncertainty and error, and the great amount of labor which is needed for reliable results, frankly avow their belief in the impracticability of any satisfactory proof that the law of the conservation of energy holds in the living organism."

In another Bulletin of this series (No. 45) a summary of previous experiments by other scientists is given; but we confine ourselves to Bulletin 136, which is by far the most thorough work done on the problem. The object of the labors here recorded was not simply to seek confirmation of the law of energy, but also to investigate the nutritive value of certain foods; and pp. 1–193 are mainly concerned with the bearing of the results of the latter question, while pp. 193–357 take up more directly the question of conservation. Though many experiments had been performed already on that subject, the authors thus testify to the need of further work: "The investigations of Rubner in Germany and of Laulanie in France had brought results fully in accordance with the law of the conservation of energy, but their experiments were made with small animals, dogs and rabbits, and were comparatively few in number; the experimental periods were rather short; the analyses of food, drink, and excreta were not carried out in great detail, and no experiments were made in which external muscular work was involved" (p. 193).

The experiments before us were made upon five men separately, placed in a specially constructed chamber, 7.5 by 4 by 6.5 feet, which was so designed as to determine the income and outgo of air, heat, moisture, *etc.* to and from the subject. "The total number of ex-

periments with measurements of income and outgo of energy in the body is 51, and the time covered by them is 150 days" (p. 99). They extended from May, 1897, to May, 1902. The chamber was called the "respiration calorimeter" because it determined the income and outgo of respiration, perspiration, and their products, and registered the heat given off from the subject's body. In each experiment the subject lived in the chamber, eating and sleeping there for a few days. The series was "divided into two classes: (1) Those in which the subjects were practically at rest, *i.e.*, had no more exercise than was involved in dressing and undressing, and care of furniture, food, and excreta; and (2) those in which they were engaged in more or less severe muscular work" (p. 99). "Of the 26 rest experiments, covering 72 days, several were with special diets, and four, covering a total of 5 days, were with the subject J. C. W. fasting" (*ibid.*). "The 25 work experiments, covering a total of 78 days, were all made with special diets . . ." (*ibid.*). "The larger number of rest experiments were made with E. O. [subject], and J. C. W. was the subject of the larger number of work experiments" (*ibid.*). The latter was a college athlete (cyclist) in prime condition; the work consisted in riding a stationary bicycle connected with an ergometer. All subjects were in excellent health during the experiments. The authors suggest indeed that "important results could be obtained also in studies of nutrition in disease . . . and other conditions more or less abnormal" (p. 10), but no results were sought under such conditions.

In order to test the conservation of energy, the income of energy in each experiment must be balanced against the outgo of substance, heat and motion. The income depends on the potential energy of the food and drink. Samples of these were analyzed and from the amount of them consumed and their equivalent in calories the energy of food and drink was determined. Subtracting from this the energy of the material which passed out in faeces and urine, we have the available store of potential energy laid up in the body. Not all of this is used, however—*i.e.*, oxidized and turned into kinetic energy (heat and movement) within the body; we wish to know just how much is used, in order to see if the amount can be equated with the energy given off from the body in the shape of heat or mechanical work. This energy of substance actually oxidized the authors' term "energy of net income." It is "represented by the available energy of the nutrients of the food (*i.e.*, potential energy of total food less that of the urine and faeces) minus the potential energy of the material gained" during the experiment. That is to say, if the subject gained so much of protein and fat, the energy residing in these

is stored in the body and takes no part in the transformation of energy which the experiment is studying. The gain of the body in protein and fat is estimated from the amounts of nitrogen and carbon given off in excreta, together with the increase in weight of the subject. If on the other hand the subject loses in body-material, the bodily reserve in protein and fat is drawn upon for energy of oxidation, and the amount lost must not be subtracted from, but added to, the potential energy of the food-substance retained in the organism. Thus we obtain the " energy of the material actually oxidized in the body " which is to constitute one side of the equation. The other side, the outgo, " consists of the heat given off and the external muscular work done " (p. 195). In the rest-experiments, the slight external muscular work " would naturally be converted into heat, as, for instance, in the impact of the foot upon the floor in stepping. . . . Roughly speaking, we may say that all the potential energy made kinetic in the body by the oxidation of food and body material left the body as heat, and that this made the net outgo of energy " (p. 194). And we must add that " so delicate were the measurements of temperature that . . . if the man inside [the calorimeter] rises to move about, the increase in the heat given off from his body with this muscular work shows itself in a rise of temperature which may be immediately detected " (pp. 11–12).

" In the work experiments a certain amount of energy is given off as external muscular work, and this added to the heat given off from the body makes the net outgo " (p. 194). It must also be mentioned that the quality and composition of air inhaled and exhaled, as well as of perspiration, were taken into account. In fact, as one peruses the report, it appears that few if any sources of error which ingenuity could suggest were unconsidered. We have given as much of the method as seems necessary, and may let this suffice for description of the conduct of the investigation. We now turn to the results.

"If the law of the conservation of energy obtains in the living organism, the net income and the net outgo of energy should be the same. In such physiological experimenting, however, it would be hardly fair to expect the figures for the two to agree for each day of a given experiment or for each experiment as a whole. . . . There may be errors in the estimates of the amounts and heats of combustion of the materials actually oxidized. Variations due to irregularities of the physiological processes of the body are unavoidable, and may materially affect the results. But . . . these errors would tend to counterbalance one another in a series of experiments, and . . . in the average of a sufficiently large number of

experiments . . . the income and outgo would be very nearly the same" (pp. 196–197).

"Exactly this is the case in the data here reported. The variations for individual days, and even those for the individual experiments . . . are not inconsiderable, but considering the average of all the experiments the agreement is very close" (p. 197). In the 25 days of 7 rest-experiments we find extreme variations ranging from —6.5 to + 9.1 per cent. of income in the energy given off. In the average of 14 experiments, however, as given on p. 123 (in Table 79) we find that the subject gave out per day 5135 calories, and oxidized within his body 5143 calories—a difference of less than one fifth of one per cent.

Now the question is, how do these experiments (the most careful, we may fairly say, hitherto conducted) show that the law of conservation holds throughout the field of organic process? Let us see if anything was taken for granted in the method which from an empirical point of view needs proof. First, it was assumed that the heat of combustion of a substance, already ascertained by combustion *outside* the body, will be the same when combustion occurs *within* the body. But surely, one says, this is permissible, else we can make no calculations of energy here. We grant it; we wish merely to point out that this *sort* of assumption —of a sameness of process between inorganic and organic—must not be carried beyond necessity. Just that, however, seems to be done in the second assumption we notice, *viz.*, that the potential energy actually oxidized in the body is the potential energy of the food taken in and kept, minus the stored tissue (or plus lost tissue). The assumption is equivalent to saying that the more of a given income is laid up as tissue, the less remains to be burned, and the more is burned, the less remains as potential energy of tissue. This implies that the energy of a given amount of food-substance taken in remains a definite and constant sum during its redistribution in the organism. How do we know this? Is it not assuming that the conservation of energy holds in the body? In short, are we not basing our measurement of the energy due to oxidation which is to give one side of the desired equation on the supposition that what we want to prove is true? It may be urged that there is no other way of estimating the "net energy of income." If that is so, it only means that there is no way of demonstrating the conservation of energy in the living body.

As far as the observations of fact go, we do not know but that some of the energy taken in and kept as food, and not stored as protein or fat, is not oxidized at all, but goes into some form of energy of a non-physical sort—mental energy perhaps, or what

you will. It might even be lost, or increased in amount. These suggestions may be dismissed as absurd; but all we here urge is that the present experiments make no decision about them. Their validity must be settled on other grounds than the results presented by Drs. Atwater and Benedict. Or we might suppose that some of the energy stored as protein and fat disappeared into an unknown form, or was even lost. There is no direct measurement of this stored energy; we do not know by plain observation whether it remains constant until drawn upon for oxidation. In inorganic nature, to be sure, it would be quite groundless to allege any change of amount without some knowable physical reason. But the conservation of energy has been proved of inorganic nature, and if we could argue from that to organic, there would have been no demand for experiments on animals.

There is however no need of straining our credulity on the matter. The easy alternative is to suppose that some of the income of energy is transmuted through the agency of the nervous system into certain mental states, such as sensation, perception and other recipient psychoses, and that some of this is translated back into bodily movements through the conative and active psychoses. This is the familiar hypothesis of interaction, and it is quite consistent with the experiments before us. We may not be able to define or measure the energy of mental states, but that does not make transformation impossible. And it might even be the case that on the whole as much energy went into the recipient states—sensation, *etc.*—as came out in the active states; so that the conservation of energy would still hold true. But whatever supposition we make on that head we do seem to find that the results of these very conscientious experiments do not render unlikely the transfer of energy from body to mind or vice versa; and the fulminations of Münsterberg and other "parallelists" appear to have no just warrant from science. And the transfer need not be of a very minute amount, as some interactionists have felt that it must be. It is not that the conservation is *nearly* proved; it is not proved at all—having been assumed in the measurements. Nor shall we be compelled to imagine some device by which mind may intervene and switch off a nerve-current or release a potency, without doing physical work. The experiments do not rule out mind from doing or suffering a very considerable amount of work.

But while we conclude that the conservation of energy has not been proved, or even approximately proved, of the living body, we believe the experiments have a very great and positive philosophic value. This may be brought out by an objection to our conclusion. For it might be urged that even though conservation is not proved

throughout the process of redistribution in the body, still it *is* proved that the quantum of energy that comes into the body and is retained, minus what is known to be stored, is equal to the quantum that comes out. This equality between beginning and end of the whole process is striking. If some of the energy given out comes *from*, say, the mind, and some of the energy taken in goes *to* that same, why is it that there is always found at the end just the amount present at the beginning? There must be some explanation of this equality, and surely the law of conservation, without recourse to a mysterious mental energy, is the natural one. Without that law, equality would hardly be so invariable. Unless, then, we can find some other reason to account for it, conservation would still be in order. To this objection we answer that such a reason can be found in the shape of a certain general law or tendency holding between organic and inorganic, as well as between various forms of life. This law can be shown on independent grounds, and has in one form or another long been recognized. It is the merit of the experiments before us to confirm it by measurements.

It is very probable that living beings would develop the habit of giving out a quantum of energy as great as that which they take in. It is, in fact, a necessity that they do so; else the store of energy in the environment, upon which they draw for subsistence, would gradually be depleted, and life must perish. Energy passes through a cycle, going from the outer world into living matter and out again; and the balance must be kept even. The energy which passes out from animals in the form of excreta goes into the soil and atmosphere, and serves to sustain the plants; the energy which the plants store in their tissues serves as the food of animals. This energy, if it diminished in amount in its passage through the cycle, would become less and less in the course of years, until finally it would not suffice for the maintenance of life. The kinetic energy given off by an animal body—heat and movement—which does not directly assume a form available for animal food, is conserved, as the law of conservation holds for all inorganic processes; and it is used by animal life when the latter obtains its food. The animal profits by energy of position, of meteorological processes, of elasticity, and other natural forces, in order to get his food; and fortunate it is for him that these are maintained at a relatively constant amount. To be sure, the amount is only relatively constant, for the heat-energy is being radiated away and lost. All the greater is the need for his returning undiminished the stock of energy which has passed through his own organism. The same reasoning holds, *mutatis mutandis*, of plant life and the bacteria. All living things must maintain the level of energy

in the material world; they would otherwise not survive. And when we consider the enormous numbers of living things, from the millions upon millions of bacteria through the nearly ubiquitous green plants and the ten phyla of animals up to man, we see how even a slight loss of energy by each individual would be magnified and would check the vital sustenance. Life itself, we infer, must early have become the kind of process that pays back what it borrows, almost to the last farthing; the least habitual failure to pays its debts, multiplied by the uncountable mass of life, would ere long be fatal. As in commerce so in life the balance must be kept. It would not matter whether the conservation of energy held in the passage through organisms; the physical energy taken in might be partly lost or transmuted into some psychical mode. Nevertheless the living being would, on pain of extinction, have to see that an equal amount of energy was restored, whether from the body or from some other reservoir or *ex nihilo*. Putting the thing in non-teleological terms, we may say that a kind of life which did not give out at least as much energy as it took in would become extinct. Natural selection, if we may use the phrase here, would weed it out.

It might be thought that though this would be true on the whole, yet individual cases might show a falling away from the law—as they do in the commercial world. But remembering that the tendency to repay, in order to be so general, must be deeply implanted in the nature of life, we find less reason for variations. Nevertheless we might well expect, in particular cases, some deviation; though it would diminish as we took averages. This is, in fact, just what we do find. The experiments showed individual departures from equality of income and outgo as great as —6.5 or + 9.1 per cent., and we can not say that this is wholly due to errors in estimation.

But why should organisms not give out *more* energy than they take in (minus storage)? If they did so, the stock of available energy in the environment would be increased, and on the whole living matter would thereby profit. The animal and plant kingdoms would give more and more sustenance to each other; heat-energy, which is favorable to life, and other forms of energy which are used by organisms in food-gathering, would grow greater, and as a result life would thrive and multiply. But by that very fact the income of energy to organisms would be increased; for vigorous organisms take more sustenance. The balance between the two poles, life and environment, would continually tend to become even. And sooner or later a limit of increase must be reached. The available space and matter would in the end put up a bar; but long before these were exhausted other conditions would interfere. The physical properties of C, O, H, and N would not permit them to receive and pass on more

than a certain amount of energy without injury to the organism. If life were the sort of process which resulted in excess of outgo over income, it would almost certainly in the long course of its history have reached that limit, and then the balance would be speedily restored—else life would be destroyed. By this time, then, life must have acquired the habit of equilibrium between income and outgo.

Nevertheless the conditions are not quite the same as regards excess and deficit of outgo. Both tend to disappear, but excess would do so more slowly than deficit. The former does not, like the latter, work toward a decrease of food-supply; natural selection will not so soon prevent it. Restriction of excess of outgo will thus probably be a later acquired habit of life—less deep-seated, more subject to variation. And if variations from the habit occur, they are more likely to occur, evidently, in creatures possessing a highly developed nervous system. For two reasons, then, we may expect that occasionally an organism like that of man would display more energy than its income from the external world would amount to, namely (1) because the habit of giving out *no* more energy than it takes in, being more tardily acquired, would command less implicit obedience than the contrasted habit and (2) because deviations from the rule are more to be expected in highly developed and complicated nervous systems than in simpler ones. Even so, however, the exceptional output of energy would hardly take place in such automatic processes as nutrition, excretion and the like. These, which are controlled from the cerebellum, are as a rule not accompanied by consciousness. This attribute of organisms is called into play when a conflict of impulses inhibits the customary reaction of stimulus; a novelty, a response which departs from the habitual, is the occasion of it. The special sort of nervous process which goes with consciousness is therefore the most likely to be the scene of a departure from the usual balance of income and outgo. We should actually look for increased output of energy over income in cases when an idea, an ideal, a conscious effort against opposing motives or bodily inertia, seems to govern the behavior of the organism. In such instances there might well be displayed in the body and as outgo from it, an amount of energy which would very considerably exceed that of intaken food. We do not now assert that this happens; only that it is possible or likely, and that the scientific measurements of energy in the human body do nothing to remove the possibility. Such examples as James detailed in his well-known theory that men may occasionally tap higher reservoirs of energy than those customarily used, would fit the hypothesis. The many cases of cure of disease by faith, prayer, suggestion, or other mental processes would illustrate the same. What prevents the

sophisticated thinker of today from taking these cases at their face-value is the fear of being thought unscientific; whereas, if our argument is correct, science has nothing to say against them.

But in any case, interaction between conscious process and bodily process would seem to be more credible than a parallelism with its closed circle of physical energy. While of course the normal equality between income and outgo might be due to the conservation of that energy alone, it might also be due to the action of natural selection, destroying in the end a kind of life that did not by interaction keep the balance even. The facts established by the experiments before us give no ground for preferring the one explanation to the other; and accordingly the view natural to experience and common sense, the view of interaction, seems the more reasonable. The philosopher and psychologist, overawed by what they hastily assumed to be a dictum of science, seem to have renounced what science had not asked them to give up, and fled when no foe pursued.

Finally, we repeat that is not a question of finding some device by which mind may influence a nerve-current without doing work—as by a switch or a releasing of potential energy. We need not content ourselves with so feeble a prerogative; the experiments have shown no reason why mind may not do a great deal of physical work. Normally, to be sure, the amount of that work would be such as to keep the equilibrium between inflow and output of energy; but in exceptional cases mind might send forth an amount which would far exceed the volume taken in through the usual physical channels.

W. H. SHELDON.

YALE UNIVERSITY.

INSTINCT AND CAPACITY—II

HOMO DOMESTICUS

MAN has been dignified by science with the title *Homo sapiens;* but his wisdom is the wisdom of his traditions. To the anatomist the cerebrum looms large; to the anthropologist—institutions.

History "records the transfer of power from one mystically sanctified source of authority to another, from a church to a book, from a book to a state, or to an intangible public opinion. But with unfailing tenacity every society from the simplest to the most complex has adhered to the principle that the one unpardonable sin consists in setting up one's private judgment against the recognized tribal authority, in perpetrating an infraction of tribal taboos."[1] If the name of the species were based on its behavior man would be called *Homo domesticus.*

[1] Lowie, *Primitive Society,* p. 440.

The significant fact of human anatomy, indeed, is not the brain but the unique generalization of the whole structure—a generalization of which the highly developed brain is but one element. To be sure, this has been overlooked almost completely by scientists who are not interested in behavior, even though they have recognized the human species as unspecialized. The British anatomist, Wood Jones, however, has made it abundantly evident that structural generalization is the reverse side of functional generalization. Functionally, man is conspicuously free of instinct compulsions to particular set acts. Biological scientists generally class his behavior as non-instinctive. And according to Wood Jones the similarly conspicuous absence of highly specialized structures from the human make-up is the anatomical statement of the same fact of human adaptability and docility. He has even hazarded a generalization: the "law of successful minimal adaptive specialization." This means that "a complete, early, and all-absorbing specialization is almost synonymous with specific senility." "It is the distinction of the human stock that it never became the slave of its arboreal environment for it became adapted to tree life in a strictly tempered manner, and it specialized to the successful minimum degree."[2]

Homo sapiens is a creature whose sense impressions are not confined to his nose; whose forelegs and paws are specialized neither to clinging nor swimming nor digging nor flying—nor even to walking. Similarly on the functional side he is equally responsive to an incalculable variety of stimuli instead of reacting to a particular and narrow range of perceptions with typical and invariable behavior. He has cut loose from all dietary dogmas,[3] and has avoided all fatal facilities.[4] He is an arboreal post-graduate, with a sound phylogenetic education.

And the process has left him correspondingly docile. This is the important fact for students of behavior. Obviously man like

[2] *Arboreal Man*, pp. 212 and 214. Of course the author does not claim any particular originality for this theory in its general form. It has been quite variously held. Watson, for instance, makes the remark, "Instinct and capacity to form habits, while related functions, are present in any animal in inverse ratio." *Psychology from the Standpoint of a Behaviorist*, p. 254.

[3] "The educational possibilities that the arboreal habit offers to a sloth are extremely limited; even the range of its diet becomes restricted, and an animal that has become an arboreal clinger is an animal entering upon specific senility." *Arboreal Man*, p. 215.

[4] Their fore-limbs (flying mammals) have become purely specialized as wings; they are no longer useful for grasping, for touch, for examination and for all the other functions which we have seen are so essential to the final education of the neopallium which makes for real evolutionary progress. *Ibid.*, p. 220.

any other creature is a compound of an indefinite number of special traits and characters, each one important enough in its own field. But around and about and above them all is the net effect of them all together: unique freedom from special (and therefore limiting) propensities—in a word, his docility.

Man has lived in every climate; he has eaten everything; he has gone off by himself in splendid isolation, and he has packed himself layer above layer into the congeries of city life; he has got along with sticks and stones, and he has altered the whole face of the earth. The attempt to enumerate his activities is hopeless; but the matter can be got at in another way.

No records have ever revealed a time when the different races and classes of men have not looked on each other's ways of life with incomprehension, wonder and disgust. To others, the life of the serf is one of squalid and malodorous futility. At the other extreme in the most rarefied atmosphere of social elevation men are encompassed by an elegant and decorative, though scarcely less pointless and sordid, futility. Between the two there is the life of assiduous calculation of the means to the end of further calculation of the means. So, in each case, it seems to the others. Civilizations stand at the cross-roads and scrutinize each other, and ask themselves that stock question of all vernaculars: "How do they do it?"

And the only adequate answer is the biological fact that man is the meekest of the domestic animals. His congenital susceptibility to domestication is stronger than that of any other barnyard creature. It is so strong that of all the species known to anatomy this one alone has never been captured in the wild state. However far down you dig he always turns up with a fancy funereal pose and a barrow-full of flints. A wild-man is a contradiction in terms.

At once a caution must be sounded against the notion that this means that man is the only species that carries on complex community activities. Of course many species, particularly insects, do that. But there is no scrap of evidence to indicate that the individuals of those species are house-broken in infancy to the systems of domestication which are to be theirs. That process—the process of domestication—is the unique distinction of man. Not only has the generalization of the human structure left man peculiarly adaptable; it has left him almost wholly without the means of carrying on except by the development of behavior complexes which he receives through domestication. He is like a person who has developed a high degree of tolerance to a poison, say cocaine: not only can

he take it in stupendous quantities; but he can not live without it. In his economy there are two indispensible elements—himself, and the drug.

Similarly, in human behavior there are two main elements: the species and its cultures. A professor, perhaps, should call this the law of tolerance to domestication. To speak of the "normal" behavior of man, as one would speak of the normal behavior of even orang-outangs, is ridiculous. The dictionary compresses the characteristic activity of the orang into four lines; what, could it say, are the normal acts of man? There is a normal structure, characteristic of the species, unaffected to any great degree by domestication. Normal behavior must needs be just what normal structure is—a species uniformity. But the only normal behavior of *Homo sapiens* is domestication; beyond that every act depends on the culture. Human behavior is the behavior of institutions.

In one further respect, perhaps, the behavior of man is as uniform and invariable and generally characteristic of a species as his culture-tolerance, to wit, his contempt and loathing for other systems of domestication than his own. Possibly this is the same law of tolerance to domestication stated in negatives as the law of alter-cultural intolerance.

Everyone recognizes as a matter of course that a scheme of behavior is necessarily a scheme of rigid taboo. The traditions of others are necessarily wrong. Intolerance is the essence of every strong tradition. And this means not mere emotional disaffection, but physiological intolerance—incapacity to assimilate the foreign material without great pain and the risk of total collapse. In infancy the vocal organs of every structurally normal human child can compass the whole range of vowels and consonants of all the jargons of Babel. An infant forms sounds which have become totally impossible for his parents through long habituation to the narrow range of modulations of one articulate language. As its palate is gradually trained to the intonations of its tradition it not only finds those sounds becoming increasingly "natural," but all others increasingly awkward, and in the end impossible. The same is true of those things which have the most awful significance—the highest reaches of religion and morality. Every religion has its heathen, and every rule of life its unrighteous. Civilization is the determination of behavior by prescription and taboo.

And the taboo pertains not so much to the exercise of judgment as to the existence of infidelism. Civilization is not primarily a conspiracy against intelligence; in each manifestation it is a necessarily exclusive mode of behavior. "The folkways are the 'right' ways

to satisfy all interests, because they are traditional, and exist in fact. . . . The right way is the way which the ancestors used and which has been handed down. The tradition is its own warrant. . . . When we come to the folkways we are at the end of our analysis." The child is meek; but he is also errant. The folkways make a man of him.

It is only to summarize these obvious and, I should think, universally admitted facts that I have used the somewhat academic generalization: the law of tolerance to domestication and its corollary of alter-cultural intolerance. The words are unimportant, but it seems quite unescapable (1) that the human species is not wild; (2) that in each of its many domestic states its behavior is guided by a system of traditions which have been assumed as easily as clothes by an essentially unspecialized creature with a natural aptitude for learning; (3) that the domesticating process does away with the immature tolerance of its subjects, leaving them culture-bound just as other species are structure-bound and instinct-bound. Such a description seems to be demanded by the facts; it neither falls short of the facts nor exceeds them.

So much for the facts. There remains the problem of justifying invidious distinctions. After all a scientific theory must not only state the truth but accomplish some laudable practical purpose. And the most laudable purpose, in the case of the sciences that deal with human affairs, is generally taken to be the preservation of those things which seem sacred and profitable to the preservers. Consequently a great deal of the best anthropological scholarship has found its *sine qua non* in the special incapacities of sex and class and race which recommend themselves to the prejudices of well-domesticated Europeans. Women lack the faculty of ratiocination; the lower orders that of enterprise. Hindus have an incapacity for work; Chinese for change; Africans for anything "above the level of a child"; and the dolicho-blond has his famous incapacity for war and predation which has set him at the forefront of a practical world with the white man's burden on his shoulders. The intention of such hypotheses is to account not only for the fact of cultural differentiation, but for the mating of each people with its culture—and for the superiority of the superior.

At first glance it seems remarkably simple and obvious to equate cultural and phylogenetic peculiarities. But the argument is handicapped by the notorious failure of the slight anatomical differences between the races to sustain any theory of behavior-limitation. However, the facts of anatomy are usually circumvented by the following device.

1. Assume that the special capacities (incapacities) of race strains are deducible from their behavior in their native cultural habitats.

2. Observe that there are wide differences between the capacities (behavior) of the different strains: this proves that the races differ in hereditary "capacity for civilization."

3. Observe the distribution over the earth of the peoples whose various capacities have just been demonstrated: it will be found that low capacity is associated with low culture and high capacity with high culture.

4. It follows that racial incapacities are the cause of culture-limitations, each culture representing the full development of its race.[5]

In the remarkably restrained chapter on race in his *Anthropology* Marett writes: "Mere prejudices, bad as they are, are hardly worse guides to action than premature exploitations of science." He might have added that to *Petitio Principii* all things are possible.

The argument for special limitations seems of no particular value, however, not so much on account of its luxuriance of logic, as because it is not needed. The principle of economy of hypothesis stands against it. The intolerance of Africans and Asiatics to European civilization and the reverse intolerance of Europeans to "heathendom" are all perfectly explicable on the basis of the acknowledged facts and the obvious inference of alter-cultural intolerance. Furthermore—and of far greater weight—the culture theory of behavior is an incomparably more fertile source of principles affecting the whole field of behavior. If it can once be recognized clearly that the content of behavior is a culture content and not an instinct content, it will be possible to make rapid progress in the development of such categories as may be necessary for the analysis of the genesis and evolution of cultural behavior-systems.

Indeed, beginnings already exist. For instance, there is the cross-fertilization theory of cultural evolution. "Cultures develop mainly through the borrowings due to chance contact. Our own civilization is even more largely than the rest a complex of borrowed traits."[6] It may seem a bit paradoxical at first to say that

[5] No reader will need a citation for this argument. Perhaps its most recent employment is in McDougall's *Is America Safe for Democracy?*

[6] Lowie: *Primitive Society*, p. 441. If I had written this I would have said: ". . . even more *obviously* than the rest. . . ." In *Imperial Germany and the Industrial Revolution* Veblen has made a detailed case study of this phenomenon. See especially Chapter II, "On the Merits of Borrowing."

cultures develop by taking in each other's washing; but call it by a biological name and you have a strict analogy to the process by which a variety of individuals are produced through a hybridized heredity. It is not unreasonable to expect from this principle the growth of a science of culture-genetics.

And lest the theory of cultures become hyper-individualized, the social multiverse idea will need to be dispelled—or psycho-analyzed away. On the basis of Cooley's truism that "a separate individual is an abstraction unknown to experience,"[1] which seems commonplace until you study it a bit, some hypotheses may be built of the identity between the linking of traditions in a culture and the development of behavior-complexes in an individual. After all, a "complex" is only a system of cultural influences provoked into action by a culturally appropriate social situation. The analysis of character is the analysis of culture-complexes.

It may even appear in the end that *Homo sapiens* meant *Homo domesticus.*

C. E. AYRES.

AMHERST COLLEGE.

THE GROUP SPIRIT AND THE FEAR OF THE DEAD

THOUGHT, like all history, frequently appears to repeat itself. Sir Thomas Browne began his essay on "Dreams" by writing: "The day supplieth us with truths, the night with pictures and falsehoods, which uncomfortably divide the natural account of our beings"; Owen Feltham, a contemporary of Browne's, began his essay on "Dreams" by writing: "Dreams are very notable means of discovering our own inclinations" and he added that the naked and natural thoughts of our minds visit us during sleep. Feltham's view has returned, with a vigorous swing, into favor. A dominant estimate of the dream supposes the "pictures and falsehoods" to be disguised versions of "our own inclinations" and the "natural thoughts of our souls" to appear in dreaming, though their nakedness may be covered by a cloak of symbolism. The modern Freudian interpretation of dreaming is not, of course, a mere repetition of Feltham: it is elaboration of a hint. Thought often seems to return upon itself, to veer backwards, when it is accepting a hint from the past. One aspect of the history of thought consists in the elaboration, during one epoch, of ideas which had been realized before but left incompletely developed as hints for future generations.

The shepherd Gyges discovered a magic ring which, when

[1] *Human Nature and the Social Order*, p. 1.

turned on his finger, made him invisible. His invisibility gave him opportunity to act wickedly and he made full use of it. In this myth Plato expressed the influence of the group, of society, upon the individual; the turning of the ring released Gyges from this influence and the shepherd's changed conduct revealed how great the pressure upon him of his fellows' opinion and coercion had been. This influence of the social group upon its members has always been realized, but it has never been so systematically explored as it is being explored today. The moment has come for the elaboration of the hint dropped by Plato in the story of Gyges.

Every new principle for resolving problems, whether new absolutely or freshly endowed with power, is a temptation to depend explanation too much upon it. It is true, for example, or probably true, that the dog's place in human society is determined by the social habits of his ancestors and the cat's place by the unsocial habits of hers. The dog is a member of the family; the cat is simply a lodger. Trotter is perhaps also right when he refers the dog's preliminary growl on sighting another dog to an enduring instinct, derived from the days when he hunted with the pack, to notify the herd. He probably rightly connects the dog's gluttony with the scrambles among his ancestors when the pack had brought down its quarry and the cat's dainty feeding with the private enjoyment by its ancestors of private kills. He is less convincing in convicting the cat of greater indifference to cold because she is less social than the dog. It seems to be straining the principle of group influence on its members to suppose that social animals necessarily feel cold more keenly than solitary animals because gregarious huddling favors warmth and associates coldness with separation from the herd. This comparatively trivial instance is a sample of the troubles which the modern recognition of herd influence brings, and will bring, in its train. Does Trotter rightly claim for dislike of novelty in action or thought an origin in the uniformity imposed by the herd upon its members? Human nature is constantly torn between eagerness for novelty and dislike of change. There is no surer method of irritating a man than by interrupting his habits—if it only be a new railway regulation that he must always show his "pass" at the barrier. There is no surer method of pleasing him than to show him something "new." It is tempting, very tempting, to explain this opposition between tendencies by separate originations in two sources. As society insists on its way and its single members also make their own private plans, so the individual is pressed into dislike of novelty by herd insistence on conformity and solicited by novelty through his private inclinations. This particular use of the social factor for explaining a curious feature of human life illustrates one kind of per-

plexity which is thrust upon us by modern insistence on the influence of the social group. It seems to us that a solitary, a Robinson Crusoe from birth, would dislike change and love novelty; it also seems logically simple to place delight in the new internally within the individual mind and dislike of change externally in pressure from the herd. Our previous wedding to an inveterate habit of searching through the innate constitution of the individual mind makes it difficult to appreciate the full explanatory scope of group influence. If we realize our duty to break with this inveterate habit too keenly we may break away too violently and replace one extreme by another. We must accustom ourselves to the strangeness in explanation through the group, but we must not be seduced into aiming at this strangeness and neglecting the individual constitution. There is a close connection, mental and physical, between every man and his social group and this connection explains many things. Can we, by recognizing this connection, obtain an explanation of the primitive attitude towards the dead?

Geikie refers to two neolithic burials of new-born infants with their mothers. Each mother held her child in her right arm and folded her left arm across her breast. Attention to the dead is a dividing line between man and brute, but the motives of this attention, in the early history of humanity, rouse a passing regret that men ever forsook the animal habit of disregarding death. Tenderness is suggested by the burials of infants with their mothers, but some modern practises among uncivilized peoples contain a sinister hint that tenderness was not the motive. The Eskimo, according to Captain Peary, often strangle an unweaned child when its mother dies and bury it with her. Among the Indians of Paraguayan Chaco the Rev. W. Burbrooke Grubb discovered the still more heartless practise of burying the child *alive* with its mother. The motive for these burials is *fear*—fear that the mother will return to claim her child. This fear of the dead runs through primitive death ritual. Fear of the dead, according to Scott Elliot, can not be demonstrated till the late neolithic period, but there is evidence in prehistoric interments that the fear of the dead did enter, often with grim consequences for the dying man, into human life. Wundt connects "crouched burials" with the demoniacal fierceness attributed to the dead. The Basuto treatment of the dying man is a grim commentary on these primitive crouched burials. The patient is carried before he is dead to an enclosure outside the hut and trussed, by two women who are his blood relations, with his hands and knees against his chin. Trussed or crouched burials seem to be one of the many methods of preventing the dead man from haunting the survivors. Many other burial rites have the same significance.

Deference to the dead subsequently appears in funeral rites, tender affection finally conquers the dread of demons, but, though Elliot Smith suggests that an effort after reanimation rather than an effort after effective banishment underlies the primitive treatment of the dead and dying, there seems little doubt that Wundt is right in assuming a primitive dread of the demoniacal habits and powers of the dead. Freud, agreeing with Wundt, believes that demons were originally projections of hostile feelings in survivors towards the dead. It is, at any rate, certain that fear of, and hostility to, the dead pervaded, and still pervades, the burial rites of primitive peoples and frequently dominates over all other motives.

A hint at one origin of the fear of the dead is given by conjoining Scott Elliot's remark with another by H. G. Wells. According to the former there is no evident fear of the dead till the late neolithic period; according to the latter the tribal mind appeared and sacrifice of personal impulse was forced upon man in neolithic times. Was the dead man originally hostile and therefore feared because death threw him outside the group? McDougall emphasizes the dominance of primitive societies by the group spirit: circumstances confine the savage to his group; he thinks of any individual as a member of such-and-such a group; responsibility for crime falls on the criminal's group; totems, ornaments, secret societies, ceremonies, initiations confirm and define connections with a group. Hostility to the outsider is a natural consequence of such an intense group spirit and is known to be, and to have been, rife in primitive communities. If death, in effect, by cutting off from participation in group life, converts the dead man into an outsider, it might direct upon him the fear and hostility which primitive groups naturally extend to those outside themselves.

Primitive fear of the dead had probably a complex origin, but it may be worth suggesting, for subsequent confirmation or disproof, that one of its motives was expulsion from the group by the dread event of death. The bitterest enmities separate those who once were friends: he who was, when alive, a comrade of the group, might, when dead and expelled, be intensely feared and bitterly hated.

JOSHUA C. GREGORY.

BRADFORD, ENGLAND.

REVIEWS AND ABSTRACTS OF LITERATURE

Human Traits and their Social Significance. IRWIN EDMAN. Boston: Houghton Mifflin Company. 1920. Pp. xi+467.

This is a book designed to give to freshmen a conscious perspective of the multifarious nature of man. It sketches the activities

and assembles the interests of a generic citizen of the century, first analyzing the operative modes of human conduct and then going forward to comprehensive depictions of their ends as exemplified in the great pursuits of art, science, religion, and the practical life of reason. The point of view, as indicated by title and division, is that of "social psychology," and it is as a social psychologist rather than as a philosopher that Dr. Edman frames his subject-matter.

It is done very engagingly, and for the good of the freshman, and indeed of the many others who will no doubt be drawn to these pages. The style is clear and unaffected; the paragraphs are adorned with numerous telling quotations and with references to authors every freshman should find out; the topics are handled in due order and with balanced weight: as a piece of book-making, in its kind, the work is capital. Furthermore, the thinking that is called for is surely salubrious, even for freshmen, provided it be taken as the author intends it to be as an introduction to problems and attitudes swaying our contemporary mind. Beyond question we are living into a period of agitated concern about the conduct of men in societies; the impelling currents of modern thought are in the direction of political and social philosophizing; we may expect a generation or more of social self-searching, human nature, generative and decadent, replacing the panorama of things cosmic in the theatre of speculation. There never has been a more vivid demand for just such books as *Human Traits*, and its author is to be felicitated both upon the general excellence of his work and the season which it strikes.

Having given this meed of praise, which is certainly due to so clean-made a book, one may be permitted, I trust, a few temperamental qualifications. Of which the first is a doubt about the kind of thing. This social psychology one would expect to be a study of the conduct of men collectively; instead, it develops into an account of whatever men have in common, and thus it purports to give a true and comprehensive account of human nature. Your freshman will surely gain the impression that here he is anatomizing to its roots the whole constitution of man and the import of all his works. He will, as a matter of fact, gain needed insights into many springs of conduct; he will understand himself and his fellows better, for the thought which will be required of him; and in particular he will have a sane and reasonable introduction to numerous currents of ideas that make up the moil of present-day social introspection. But he will get it all aloof from the subject, which is life in all its concrete complexity, and he will retain it with an assurance that will carry him through many a day of blind mis-

understanding of things human. Your social psychologist studies the *Genus Homo* as your biologist does an ant-hill, with vast concern about descriptive apparatus and faint realization of the fact that the noumenal essence of its nature is forever shut off from his understanding. The conceit of knowing men is easy to cultivate in youth, and oftentimes it is a conceit which the experience of years fails to correct. This is not saying that such a book as Dr. Edman's is wanting in edification for the young; but it is meant for a warning against its too ready absorption. 'Twere pity, indeed, if young men should be carried by the illusion of its perspective into a cocksure and superficial philosophy, as well might happen. To some extent I get from the book the same pause which Mr. Wells's *Outlines of History* impels: Is Man, after all, so poor a thing? In my view the evidence of life leads elsewhere.

In particular—and here I come to a quarrel which I would hold not merely against Dr. Edman, but against the main tides of contemporary psychology, social and what-not—in particular, I do not believe that human traits can be so assembled as to picture a total or living man. Instincts, habits, appetites, imaginings, satisfactions, and the like, are without bond or meaning until the character of an agent, not made by them, but making them in their several sorts, is duly recognized. This the psychologists decline to do, with the consequence that they give us lexicons but no science. And so, when Dr. Edman, with the valiantest intentions in the world, sets out to justify reason and the life of reason, he is driven to gloss over its essential character, which, as Milton says, is choosing, and to treat it as some vague precipitate of muddied and perturbed reflexes. "Man's reason," he says, "which has its roots in his instincts, is the means of their harmonious fulfillment." And here we have in a phrase the key to the whole philosophy of a sense-engaged world. In direct speech, reason is the panderer of the passions: that is not only the psychological inference to be drawn, it is also the social and moral sermon which is preached to our generation.

That our day believes itself to believe this, I make no doubt. It is the matter of more or less learned expression in the fields of psychology, sociology, economics, historiography, social philosophy, and in the fashionable chat of the sophisticated. The idea is a natural consequence of the vogue of Darwinism, which, in explaining man as a confluence of environment and heredity (itself nothing but ancestral environment), makes of him not even a machine, but only a dumb mechanical product. It has come in with this vogue and has carried the fashionable theorizing of our time. But it has

not carried the practical convictions of the day. There are few more striking conflicts of human ideals in the history of mankind than has been the great struggle inaugurated by the two past centuries. The eighteenth century saw the rise and triumph of belief in the individual responsibility of political men; in the "rights of man" as a person and citizen, and essentially as a free agent; liberty and democracy were the slogans of the period, and pragmatically they "worked"—for there has seldom been in history a more vivid carrying out of ideas than has been the carrying out of this democratic philosophy of man sponsored by Milton, Descartes, Locke, Rousseau, and the makers of the Revolutions. In the western world the whole theory has remained vital, and recently a great war was fought over it—certainly not as yet to see it crushed by its great antagonist, that Darwinism which for three quarters of a century has been denying all that the democracies of the world affirm. The struggle is by no means ended; and it is certainly a game fray, with the political convictions of a quarter of mankind on one side and the influence of the schools almost wholly upon the other.

To which party will Dr. Edman's book lend support? Assuredly not to the democrats, not to the men who believe in the agential power of mankind to master environment. And as I think over the whole meaning of education, in its relation to our institutions, I am led to pause once more. Here is a book wonderfully responsive to the thought and feeling of our day, a book which truly does give a comprehensive perspective of society as society is conscious of itself. But of the truth of human nature? I am uncertain that just these ideas will lead to saner citizenship in these United States of America; I am doubtful if they will lead young men to believe in their country. And for my own part, I should prefer that my boy, as freshman, should get his notion of human nature from Montaigne's *Essais* or even Burton's *Anatomy*, local as these are of other times, and vastly more prefer that he should get it from Plato or the Bible. After all, we get the coloration of our own day all too indelibly; but the true complexion of man can be known only through laborious ventures into other ages.

H. B. Alexander.

University of Nebraska.

JOURNALS AND NEW BOOKS

MIND. January, 1921. *Professor Ward's Psychological Principles* (pp. 1–24): G. Dawes Hicks.—The writer concludes: "I venture to urge that thoroughly as he [Ward] has exposed the weakness of 'representationism' he has yet been too lenient with it,

and that the conception of the conscious subject, which he has himself done so much to develop, can not, in truth, be brought into coherence with the remnant of that doctrine which he retains." *Prof. Alexander's Gifford Lectures* (pp. 25–39): C. D. BROAD. – An exposition and criticism of *Space, Time, and Deity.* The writer thinks that readers will not be disappointed in their hope that in this work "England was at length to produce a comprehensive system of constructive metaphysics in which the speculative boldness of the great Germans should be combined with the critical good sense of Locke, Hume, and Berkeley." The article is concluded in the April *Mind. Hume's Ethical Theory and Its Critics* (pp. 40–56): FRANK CHAPMAN SHARP. – A paper attempting "to deal with a number of serious misinterpretations which have become current, and which are concealing the real Hume from the view of students of the moral life." *Discussion. Plato's 'Misconception' of Morality:* E. HALE. *Critical Notices.* W. McDougall, *The Group Mind:* B. BOSANQUET. R. F. A. Hoernle, *Studies in Contemporary Metaphysics:* JOHN LAIRD. A. Einstein, *Relativity;* A. S. Eddington, *Space, Time, and Gravitation;* A. N. Whitehead, *The Concept of Nature:* A. E. TAYLOR. C. A. Richardson, *Spiritual Pluralism and Recent Philosophy:* H. V. KNOX. J. Handyside, *The Historical Method in Ethics, and other Essays:* E. E. C. JONES. *New Books.* H. R. Marshall, *Mind and Conduct:* J. DREVER. G. Gentile, *Teoria Generale dello Spirito come Atto Puro:* B. BOSANQUET. G. Gentile, *Discorsi di Religione:* B. BOSANQUET. E. Freundlich, *The Foundations of Einstein's Theory of Gravitation:* C. D. BROAD. D. C. Macintosh, *Theology as an Empirical Science:* G. GALLOWAY. M. Casotti, *Saggio di una Concezione Idealistica della Storia:* B. BOSANQUET. P. Gentile, *L'Essenziale della Filosofia del Diritto:* B. BOSANQUET. H. H. Goddard, *Psychology of Normal and Subnormal:* F. C. S. SCHILLER. E. Chiocchetti, *La Filosofia di Benedetto Croce;* A. Gemelli, *Religione e Scienza:* H. WILDON CARR. C. T. H. Walker, *The Construction of the World in Terms of Fact and Value:* O. C. QUICK. S. A. McDowall, *Beauty and Beast:* B. BOSANQUET. Jacob Boehme, *Six Theosophic Points and Other Writings:* B. BOSANQUET. S. Ward, *The Ways of Life:* B. BOSANQUET. Dr. L. Stein, *Philosophical Currents of the Present Day, vol. II:* J. L. H. C. Link, *Employment Psychology.* A. T. Schofield, *The Mind of a Woman:* F. C. S. S. P. Oltramare, *Vivre, Essai de Biosophie theorique et pratique:* F. C. S. S. R. R. Marett, *Psychology and Folk-Lore:* J. DREVER. A. G. Tansley, *The New Psychology and its Relation to Life.* E. Gilson, *Le Thomisme:* A. E. T. C. Zervos, *Un Philosophe Neo-Platonicien du XIe Siecle, Michael Psellus:* A. E. T.

Guénon, R. Introduction générale à l'étude des doctrines hindoues. Paris: Rivière. 1921.

Guy-Grand, G. Le Conflit des idées dans la France d'aujourd'hui. Paris: Rivière. 1921. Pp. 269.

Hobhouse, L. T. The Rational Good. New York: Henry Holt & Co. 1921. Pp. xxii + 237.

NOTES AND NEWS

To the Editors of the JOURNAL OF PHILOSOPHY:

Just after my article on "The Need of a New English Word to Express Relation in Living Matter"[1] was published, my attention was called to the fact that Dr. F. Müller-Lyer's *Phasen der Kultur* had been published in English (*The History of Social Development*, Alfred A. Knopf, 1921), and that in this work much is made of the principles of differentiation and integration.

A rather hasty reading of the chapters which have these principles for their specific topics reveals Müller-Lyer's recognition of the importance of these principles in social phenomena. But such reading also so clearly reveals, to me at least, the consequence of failure to recognize the phenomena which in my article I proposed to designate as conferentiation, that I feel the opportunity ought not to be permitted to pass without attention being called to the point, even though under the circumstances this can be done only in the meagerest way.

To be as brief as possible, take as an example a single point in the author's discussion of industrial differentiation and integration. Under the heading, "The Phaseology of the Medium of Exchange," Phase II: "Intertribal Barter without Medium of Exchange," the author mentions the case of certain Congo tribes. Shore dwellers and inland dwellers were differentiated into fishermen and banana-men, the concomitant integration being the exchange of articles of these two classes of producers.

The point I would make is this: In case the differentiation were so complete or extreme that the fishermen produced absolutely nothing but fish, and the banana-men produced absolutely nothing but bananas, it would be *physiologically impossible* for either group to exist, or at least exist well, by eating its own product alone. Were such existence attempted the result would be physical weakness and probably decay. Over-differentiation would result in disintegration. In such a case, consequently, an exchange of products between the groups, providing each, perhaps, with a "balanced ration," might properly be called economic integration.

[1] THIS JOURNAL, vol. XVIII, nos. 17 and 18.

It would enable each group to go on existing as it existed before the differentiation became so intense. It would be a way of preserving the status quo of the individuals of each group, but it would not of itself add anything to either group. Physiologically judged it would be on the plane of assimilation, of nutrition, but not necessarily on the plane of growth and development.

But unquestionably there is a kind of exchange of products which does much more for each party to the transaction than to enable it to maintain its status quo. Genuine growth and development on both sides may result therefrom. Each party may be acted upon determinatively by the exchange, without undergoing any impairment of integrity. For example, America may sell typewriters to Japan and buy screens in return, both nations being spiritually as well as physically benefited by the exchange. Industrial exchange of this sort is conferentiative in the strict sense of our definition. It seems to me it is not going too far to say that recognition of the difference between integration and conferentiation in the economic realm is recognition of the difference between basing economic theory and practise on purely physical grounds and basing them on spiritual and moral as well as physical grounds.

Müller-Lyer's book is said to be a "serious attempt at an Inductive Sociology." That it is such is obvious on every page; and that it scores a large measure of success in this effort seems beyond question.

I submit, however, that here is an inductive point of first rate importance which the author has overlooked.

WILLIAM E. RITTER.

SCRIPPS INSTITUTE FOR BIOLOGICAL RESEARCH.

Mr. Pedro S. Zulen of Cambridge, Mass., has sent us the following addenda to Professor Perry's *Annotated Bibliography of William James:*

1892—2. Translated into Spanish and prologue by Santos Rubiano. Madrid, D. Jorro, 1916.

1896—2. Translated into French by L. S. Pidoux, in–12, pp. 43. Saint Blaise, Foyer Solidariste, 1908.—Into Spanish in the volume: William James, *La vida eterna y la fé* of the Biblioteca Sociológica Internacional. Barcelona, Heinrich y Cia., 1911.

1897—3. Translated into French and preface by Löys Moulin, pp. 345. Paris, Flammarion, 1916.—Last essay translated into Spanish in the above-mentioned volume *La vida eterna y la fé.*

1898—5. Translated into Italian by C. Pironti. *Rivista d'Italia*, February 1906, pp. 320–343. The same translation but corrected by G. Papini, in William James, *Saggi Pragmatisti*. Lanciano, R. Carabba, 1919.

1899—7. Translated into Spanish and prologue by Carlos M. Soldevilla. Two volumes of the Biblioteca Sociológica Internacional. Barcelona, Heinrich y Cia., 1904.

1899—11. Translated into Spanish in the above-mentioned volume *La vida eterna y la fé.*

1900

Preface especially written by William James for the Italian edition of *The Principles of Psychology*, pp. VII–XI. (A statement and a defense of his psychological point of view.)

1904—13, 1905—9 and 1907—1. Italian translation in the above-mentioned *Saggi Pragmatisti.*

1908—8. Translated into French in the second edition of Marcel Hebert's *Le Pragmatisme.* Paris, Emile Nourry, 1909, pp. 139–153. (This translation was revised and corrected by James.)

1909—8. Translated into French under the title, *L'idée de vérité*, by Mme. L. Veil and Maxime David, in–8, pp. 258. Paris, Alcan, 1913.

1911—1. Translated into French by Roger Picard under the title *Introduction à la Philosophie, Essai sur quelques problèmes métaphysiques.* Paris, Marcel Rivière, 1914. Volume XIV of the collection *Études sur le Devenir social.*

The annual meeting of the American Psychological Association will be held this year at Princeton University. The programme committee, being anxious to encourage discussion, has decided to limit the papers to three fourths the usual number. Abstracts of all papers to be presented must be in the hands of the Secretary by November 13. This is a somewhat earlier date than usual but it is planned this year to have the abstracts printed and distributed before the meeting, so that members may be prepared to discuss the papers at the various sessions.

Dr. John Henry Muirhead, professor of philosophy in the university of Birmingham, has given a series of lectures during the last two weeks at the Union Theological Seminary in New York. The subject of the series was "The Spiritual Basis of Citizenship." The first lecture stated the problem and defined the meaning of spirit and spiritual. The other three dealt with three different spheres of spiritual activity: science, morality and citizenship.